AMENDMENTS TO THE CLAIMS

1. (previously presented) An azeotropic distillation process for the recovery of at least one cyclic ester of a hydroxy organic acid from a feed stream comprising at least one of a hydroxy organic acid, an ammonium salt of a hydroxy organic acid, an amide of a hydroxy organic acid, or an ester of a hydroxy organic acid, comprising the steps of:

mixing a feed stream and at least one azeotroping agent, thereby producing a mixture, wherein the feed stream comprises at least one of a hydroxy organic acid, an ammonium salt of a hydroxy organic acid, an amide of a hydroxy organic acid, or an ester of a hydroxy organic acid and wherein the at least one azeotroping agent is capable of forming at least one azeotrope comprising a cyclic ester of a hydroxy organic acid; and

distilling the mixture by a method comprising the steps of

(i) heating the mixture sufficiently to produce a first vapor stream comprising at least one azeotrope comprising the cyclic ester of the hydroxy organic acid and the at least one azeotroping agent; and

(ii) separating the first vapor stream from the mixture.

2. (original) The process of claim 1, wherein a first bottoms stream is produced as the first vapor stream is separated from the mixture.

3. (original) The process of claim 1, wherein the at least one azeotroping agent is a vapor or a liquid as it is mixed with the feed stream.

4. (previously presented) The process of claim 3, further comprising mixing a catalyst along with the at least one azeotroping agent and the feed stream.

5. (previously presented) The process of claim 4, wherein the at least one azeotroping agent is a liquid and the catalyst is homogeneous in the feed stream or in the at least one azeotroping agent.

6. (previously presented) The process of claim 4, wherein the at least one azeotroping agent is a liquid and the catalyst is heterogeneous in the feed stream or in the at least one azeotroping agent.

7. (previously presented) The process of claim 4, wherein the at least one azeotroping agent is a vapor and the catalyst is heterogeneous in the at least one azeotroping agent.

8. (original) The process of claim 1, wherein the first vapor stream is separated into a second vapor stream that comprises water and azeotroping agent and a product stream comprising cyclic ester of the hydroxy acid and azeotroping agent.

9. (original) The process of claim 1, further comprising the steps of partially condensing the first vapor stream and melt crystallizing the condensate of the first vapor stream.

10. (original) The process of claim 1, further comprising the steps of immediately condensing the first vapor stream and crystallizing the cyclic ester of the hydroxy organic acid therefrom.

11. (original) The process of claim 1, wherein the feed stream comprises a hydroxy organic acid having from 2 to 6 carbon atoms.

12. (original) The process of claim 1, wherein the feed stream comprises a hydroxy organic acid that is lactic acid and the cyclic ester is lactide.

13. (original) The process of claim 1, wherein the feed stream comprises a hydroxy organic acid that is L-lactic acid and the cyclic ester is L-lactide.

14. (original) The process of claim 1, wherein the feed stream comprises a hydroxy organic acid that is glycolic acid and the cyclic ester is glycolide.

15. (original) The process of claim 1, wherein the feed stream comprises an ester of a hydroxy organic acid that is a diol-diester of the organic acid.

16. (original) The process of claim 15, wherein the diol-diester is 1,2-dodecandiol-dilactic acid ester.

17. (original) The process of claim 15 wherein the feed stream further comprises a liquid extractant that comprises an alkylamine.

18. (original) The process of claim 1, wherein the mixture is heated in a flash reactor.

19. (previously presented) The process of claim 1, wherein the feed stream is a fermentation broth.

20. (previously presented) The process of claim 19, wherein the fermentation broth is dehydrated before the feed stream is mixed with the at least one azeotroping agent.

21. (previously presented) The process of claim 19, wherein the fermentation broth is partially purified before the feed stream is mixed with the at least one azeotroping agent.

22. (previously presented) The process of claim 19, wherein the fermentation broth is acidified before the feed stream is mixed with the at least one azeotroping agent.

23. (previously presented) The process of claim 1, wherein the at least one azeotroping agent is a hydrocarbon having a boiling point of between about 100°C less than and 150°C more than the boiling point of the cyclic ester.

24. (previously presented) The process of claim 23, wherein the at least one azeotroping agent has a boiling point of between about 50°C less than and 50°C more than the boiling point of the cyclic ester.

25. (previously presented) The process of claim 24, wherein the at least one azeotroping agent is an aromatic ether or an aliphatic ether.

26. (previously presented) The process of claim 23, wherein the at least one azeotroping agent has from 7 to 16 carbon atoms.

27. (previously presented) The process of claim 26, wherein the at least one azeotroping agent is aromatic or aliphatic.

28. (previously presented) The process of claim 27, wherein the at least one azeotroping agent is a branched, unbranched, or cyclic aliphatic hydrocarbon.

29. (original) The process of claim 26, wherein the hydrocarbon is selected from the group consisting of diethylbenzene, dodecane, decane, octylbenzene, propylbenzene, and ethylbenzene, and mixtures thereof.

30. (original) The process of claim 1, wherein the process is a continuous process.

31. (original) The process of claim 1, wherein the process is a batch process.

32. (original) The process of claim 1, wherein the cyclic ester is L-lactide or meso-lactide.

33. (original) The process of claim 1, wherein the mixing step is performed in a falling film evaporator, a wiped film evaporator, a tray column, or a packed column.

34. (original) The process of claim 1, wherein at least part of the process is carried out at a pressure of about 740 mm Hg to 780 mm Hg.

35. (previously presented) The process of claim 1, wherein the feed stream further comprises less than about 50 ppm of sodium, calcium, magnesium, potassium, manganese, iron, and chromium.

36. (original) The process of claim 1, wherein the cyclic ester is produced by an esterification reaction which also produces water as a leaving group.

37. (original) The process of claim 1, wherein the cyclic ester is produced by a transesterification reaction which also produces an alcohol as a leaving group.

38. (currently amended) The process of claim ~~36~~ 37, wherein the alcohol is methanol.

39. (canceled)

40. (original) The process of claim 1, wherein the cyclic ester is produced by a reaction that also produces a dimer or an oligomer of the hydroxy organic acid as a leaving group.

41. (original) The process of claim 1, wherein the cyclic ester is produced by a reaction that also produces ammonia as a leaving group.

42. (currently amended) A process for recovering a cyclic ester of a hydroxy organic acid from a crude composition of a cyclic ester, comprising the steps of:

mixing a crude composition of a cyclic ester of a hydroxy organic acid with an azeotroping agent that is capable of forming an azeotrope with the cyclic ester;

heating the mixture to produce a vapor stream that comprises an azeotrope comprising the cyclic ester and the azeotroping agent; ~~and~~

condensing the vapor stream; and

recovering the cyclic ester.

43. (currently amended) The process of claim [[41]] 42, wherein the cyclic ester is selected from glycolide and lactide.

44. (canceled)

45. (currently amended) The process of claim [[44]] 42, wherein the azeotroping agent is selected from the group consisting of diethylbenzene, dodecane, decane, octylbenzene, propylbenzene, ethylbenzene, and mixtures thereof.

46. (currently amended) The process of claim [[41]] 42, wherein the crude composition further comprises a hydroxy organic acid and the azeotroping agent is unable to form an azeotrope with the hydroxy organic acid.

47. (original) The process of claim 46, wherein the hydroxy organic acid can be reacted to produce the cyclic ester.

48. (currently amended) A process for the production of at least one cyclic ester of a hydroxy organic acid from a feed stream comprising at least one of a hydroxy organic acid, an ammonium salt of a hydroxy acid, an amide of a hydroxy organic acid, or an ester of a hydroxy organic acid, comprising the steps of:

mixing a feed stream and at least one azeotroping agent, wherein the feed stream comprises at least one of a hydroxy organic acid, an ammonium salt of a hydroxy acid, an amide of a hydroxy organic acid, or an ester of a hydroxy organic acid, and wherein the at least one azeotroping agent is capable of forming at least two azeotropes, a first azeotrope comprising a hydroxy organic acid, and a second azeotrope comprising a cyclic ester of a hydroxy organic acid;

heating the mixture comprising the feed stream and the at least one azeotroping agent in a first column to produce a first vapor stream that comprises a first azeotrope comprising the hydroxy organic acid and the at least one azeotroping agent;

feeding the first vapor stream to a second column; and

reacting the hydroxy organic acid of the first vapor stream in the second column to produce at least one cyclic ester of the hydroxy acid and water, wherein a second overhead vapor stream from the second column comprises water and at least one azeotroping agent, and a bottoms stream from the second column comprises at least one cyclic ester of the hydroxy acid.

49. (currently amended) The process of claim 48, wherein the first vapor stream further comprises a second azeotrope comprising a cyclic ester of a hydroxy organic acid and the at least one azeotroping agent.

50. (original) The process of claim 48, wherein the heating is performed by a flash reactor.

51. (original) The process of claim 48, wherein the second column comprises catalysts for cyclic ester formation.

52. (original) The process of claim 48, wherein the first vapor stream is dehydrated before being fed into the second column.

53. (previously presented) A process for the separation of a hydroxy organic acid from a cyclic ester thereof, comprising the steps of:

mixing a feed stream comprising a hydroxy organic acid and a cyclic ester thereof and at least one azeotroping agent, thereby producing a mixture, wherein the at least one azeotroping agent is capable of forming at least two azeotropes, a first azeotrope comprising the hydroxy organic acid and a second azeotrope comprising a cyclic ester of the hydroxy organic acid; and

distilling the mixture by a method comprising the steps of

(i) heating at least one of the feed stream, the at least one azeotroping agent, or the mixture thereof to produce a first vapor stream that comprises the first azeotrope comprising hydroxy organic acid and azeotroping agent; and

(ii) separating the first vapor stream from the mixture, producing a bottoms stream comprising cyclic ester of the hydroxy organic acid and azeotroping agent.

54. (previously presented) A process for the separation of L-lactide from meso-lactide, comprising the steps of:

mixing a feed stream comprising L-lactide and meso-lactide and at least one azeotroping agent, thereby producing a mixture, wherein the at least one azeotroping agent is capable of forming at least two azeotropes, a first azeotrope comprising L-lactide, and a second azeotrope comprising meso-lactide; and

distilling the mixture by a method comprising the steps of

(i) heating the mixture sufficiently to produce a first vapor stream that comprises a first azeotrope comprising L-lactide and azeotroping agent; and

(ii) separating the first vapor stream from the mixture, producing a bottoms stream comprising meso-lactide and azeotroping agent.

55. (new) The process of claim 42, wherein the azeotroping agent is a hydrocarbon having a boiling point of between about 100°C less than and 150°C more than the boiling point of the cyclic ester.

56. (new) The process of claim 55, wherein the azeotroping agent has from 7 to 16 carbon atoms.